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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ZHENG, LOIS L

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 05/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/059,907

Applicant(s)

HANSON ET AL.

Examiner

Lois Zheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-38 and 49-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-38 and 49-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claims 1-25, 39-48 and 62-90 are canceled in view of the amendment filed 17 February 2006. Therefore, claims 26-38 and 49-61 are currently under examination.

Drawings

2. The replacement drawing filed 17 February 2006 is entered.

Specification

3. The amendment of the specification filed 17 February 2006 is entered.

Terminal Disclaimer

4. In contrary to applicant's alleged filing of terminal disclaimer, no terminal disclaimer has been filed on record.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 34-38 and 53-54 and 56-61 rejected under 35 U.S.C. 102(e) as being anticipated by Uzoh et al. US 6,261,426 B1(Uzoh).

Uzoh teaches an electroplating apparatus comprising a reactor vessel (Fig.1 numeral 14) filled with processing fluid, an electrode(i.e. anode)(Fig. 1 numeral 4), a

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shield(Fig. 1 numeral 10) and a diffuser(Fig. 2 numeral 8) between the electrode and the ring field shaping element. Uzoh further teaches that suitable counterelectrodes are described in US application serial no. 09/192,431, now US Patent No. 6,251,251 B1(US'251)(col. 3 lines 32-37). US'251 teaches the use of anode bag disposed over the anode and separating the consumable anode and the diffuser(Fig. 6 numerals 45, 31 and 47). Since US'251 is incorporated into Uzoh by reference, Uzoh inherently teaches an anode bag covered consumable anode positioned below the diffuser.

Regarding claim 34, the reactor vessel as taught by Uzoh has the claimed one or more walls defining a processing space. The anode bag as taught by Uzoh reads on the claimed pressure drop member dividing the processing space into a first fluid flow region and a second fluid flow region. The anode bag as taught by Uzoh is inherently capable of facilitating generation of a pressure drop thereacross. Since the only positively recited structural limitations in claim 34 are "one or more walls defining a process space" and "a pressure drop member disposed in the processing space" and there are no other structural limitations associated with the recited fluid flow being from the second region into the first region across the pressure drop member, the examiner takes the position that "fluid flow during electrochemical processing of the microelectronic workpiece being from the second region into the first region across the pressure drop member" is construed as process limitation which does not lend patentability of the instant apparatus claims. See MPEP 2114. Therefore, Uzoh teaches the claimed electrochemical processing apparatus.

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Regarding claim 35-37, the apparatus of Uzoh comprises the claimed anode and cathode and permeable membrane.

Regarding claim 38, the fluid flow regions separated by the anode bag(i.e. membrane) as taught by Uzoh read on the claimed first and second fluid flow regions.

Regarding claim 53, Uzoh teaches the claimed chamber(Uzoh, Fig.1 numeral 14) filled with processing fluid, the claimed at least one fluid inlet(Uzoh, Fig. 1 numeral 2), the claimed electrode support carrying an electrode(i.e. anode), the claimed permeable membrane(US'251, Fig. 6 numeral 45) and the claimed porous flow distribution element(i.e. diffuser) (Uzoh, Fig. 1 numeral 8) and the claimed shield(i.e. ring field shaping element)(Uzoh, Fig. 1 numeral 10). In addition, the claimed workpiece support is inherently present in the electroplating apparatus of Uzoh in order to rotate the workpiece during electroplating as taught by Uzoh(col. 4 lines 4-8). The permeable membrane of Uzoh is positioned between the electrode support and the workpiece support as claimed. The porous flow distribution element of Uzoh is positioned between the permeable membrane and the workpiece support as claimed. The shield of Uzoh is positioned between the flow distribution element and the workpiece support as claimed.

Regarding claim 54, the membrane of Uzoh is inherently permeable to ionic species in the processing fluid as claimed since the anode of Uzoh is consumable.

Regarding claim 56, Uzoh further teaches claimed multitude of fluid flow openings(Fig. 1 numerals 28 and 26).

Regarding claims 57-58, the shield(i.e. ring field shaping element) of Uzoh comprises a rim and an opening disposed annularly inwardly from the rim as claimed.

Regarding claim 59, the semiconductor wafer substrate as taught by Uzoh reads on the claimed microelectronic workpiece.

Regarding claim 60, the claimed processing fluid is inherently present in the reactor vessel of Uzoh.

Regarding claim 61, the electrode(i.e. anode) of Uzoh is carried by an electrode support as claimed.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uzoh in view of Reid et al. US 6,126,798(Reid).

The teachings of Uzoh are discussed in paragraph 6 above. However, Uzoh does not explicitly teach that the claimed conically shaped membrane.

Reid teaches an electroplating apparatus comprising a reactor vessel (Fig.2 numeral 54A) filled with processing fluid, a workpiece support(Fig. 1 numeral 32), an electrode(i.e. anode)(Fig. 2 numeral 206), a ring field shaping element(Fig. 2 numeral 314) and a conically shaped membrane(Fig. 2 numeral 208) between the electrode and the ring field shaping element.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the conically shaped membrane as taught by Reid into the anode bag(i.e.

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11. Claims 53-61 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-33 of U.S. Patent No. 6,368,475 B1 in view of Uzoh. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-33 of U.S. Patent No. 6,368,475 B1 teaches an electrochemical processing apparatus comprising a reactor vessel, a pressure drop member, and two fluid flow regions with the workpiece in one of the fluid flow region and the anode in the other fluid flow region.

However, the claims of U.S. Patent No. 6,368,475 B1 do not explicitly teach the claimed diffuser and the claimed ring field shaping element.

The teachings of Uzoh are discussed in paragraphs 6 and 8 above. Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the diffuser and the ring field shaping element of Uzoh into the electrochemical processing apparatus of U.S. Patent No. 6,368,475 B1 in order to produce more uniform electroetched or electroplated films as taught by Uzoh(col. 2 lines 57-67).

Allowable Subject Matter

12. Claims 26-33 and 49-52 are allowed.

13. The following is an examiner's statement of reasons for allowance: The prior art of record does not teach or suggest, either alone or in combination, the claimed electrochemical process apparatus comprising at least one processing fluid inlet disposed exterior to the interior region of the electrode housing to provide a flow of processing fluid into the processing space and at least one processing fluid outlet in fluid communication with the interior region of the electrode housing to generate a flow

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11. Claims 53-61 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-33 of U.S. Patent No. 6,368,475 B1 in view of Uzoh. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-33 of U.S. Patent No. 6,368,475 B1 teaches an electrochemical processing apparatus comprising a reactor vessel, a pressure drop member, and two fluid flow regions with the workpiece in one of the fluid flow region and the anode in the other fluid flow region.

However, the claims of U.S. Patent No. 6,368,475 B1 do not explicitly teach the claimed diffuser and the claimed ring field shaping element.

The teachings of Uzoh are discussed in paragraphs 6 and 8 above. Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the diffuser and the ring field shaping element of Uzoh into the electrochemical processing apparatus of U.S. Patent No. 6,368,475 B1 in order to produce more uniform electroetched or electroplated films as taught by Uzoh(col. 2 lines 57-67).

Response to Arguments

12. Applicant's arguments with respect to claim 53 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

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permeable membrane) of Uzoh in order to enhance gas bubble removal as taught by Reid(col. 7 lines 41-55).

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 26-38 and 49-52 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-33 of U.S. Patent No. 6,368,475 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-33 of U.S. Patent No. 6,368,475 B1 teaches an electrochemical processing apparatus comprising a reactor vessel, a pressure drop member, and two fluid flow regions with the workpiece in one of the fluid flow region and the anode in the other fluid flow region.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LLZ


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